GAS JOURNAL, SEPT. 6, 1939

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Editorial Notes

National Defence

DURING the last year of the Great War the late Lord Moulton, Director-General of Explosive Supplies, was President of The Institution of Gas Engineers, and in his Address to the Institution in June of 1918 he said: "No one has had such a unique opportunity of witnessing the response of the Industry to new and exceptional demands made upon it by reason of the war. Your Industry—typically peaceful in character and aims—has furnished material for purely war purposes, without which it would have been impossible to maintain the fight. Not only have the benzole, toluole, and ammonia produced by it furnished the materials for our high explosives, but in the direction of other needs of very different nature it has given promise of similar usefulness."

Now we enter another major conflict, and once again our Industry will do all in its power, as an essentially peaceful public utility supplying millions of homes with heat and light, to help the Nation in the grave period which lies ahead. Its task in endeavouring to ensure continuity of supply will obviously be no light one, but that task will be taken up with resolution and with resource. It is idle to speculate on what the many difficulties and hardships will be which will have to be faced, but the spirit of loyalty which has animated our Industry throughout its existence will be a major factor in finding a solution to them.

Conditions are vastly different in 1939 from those in 1914. Then the risk of damage from the air was infinitesimally small compared with what it is to-day. Then there was not the problem of wholesale evacuation of the population from the large vulnerable urban centres to safer areas. What exactly the incidence of this transference will be in reducing outputs here and increasing demands there, time will tell; but there can be no doubt that the effect will be great.

On the other hand, the state of preparedness of the Industry to resist attack is also different in September, 1939. Air raid precaution measures have been carried through with a will during the past eighteen months. Safety of personnel, concealment of plant, duplication of mains, interconnexion of mains, training of personnel—all these and other measures have been executed or are being put into rapid effect.

And in regard to the recovery of benzole the position is entirely changed. The technique of recovery has been highly developed, particularly of recent years. The bulk of the gas produced is already being stripped, and those undertakings not at the moment recovering benzole will shortly fall into line. Efficient plant, economical to install and simple to operate, is available for works large and small alike.

The times ahead are grim enough, but once again the Gas Industry will put forward every ounce of effort to meet to the full the heavy demands which will be made upon it, and will once again earn the type of tribute paid to it by Lord Moulton in 1918.

Fuel Rationing

The Fuel and Lighting Order made by the Secretary for Mines comes into force to-day. All manner of sacrifices will be called for in the coming struggle, among them restriction in the use of gas, coal, coke, and electricity. The first step taken is to ration the use of fuel for domestic and small industrial purposes, the aim being to conserve supplies and provide against shortages due to local dislocation. At the moment the limit is fixed at 75% of the quantity consumed in the corresponding quarter of the year ended June 30, 1939. The Order, however, provides for the consideration of special cases by local fuel overseers, and this would cover an increase in the number of occupants of premises arising from evacuation arrangements.

As far as the Gas Industry is concerned, consumers will not be rationed below 100 therms of gas and 2 tons of coke per annum. With gas at 500 B.Th.U. per cu.ft. this limit represents a consumption of 20,000 cu.ft. per consumer per annum, so that the Order cannot be considered as unduly drastic. It is open for the Secretary of Mines to vary the percentage allowable, should this become necessary. As a beginning, however, as we have suggested, the lower limit beyond which rationing does not apply cannot be regarded with consternation. A great deal of useful service can be performed in a year by 100 therms of gas and 2 tons of coke.

Flexibility

WE have often referred to the great flexibility of the gas-making process. In this flexibility the Gas Industry has a truly remarkable asset—an asset which increases with new developments and new experiments. As example, we have

the recently erected oil gas plant at Newport, Mon., to serve as an emergency stand-by in case the coke oven gas supply to the undertaking should from any cause fail. This type of plant can be brought into service in a few hours' time, and it has the advantage that the gas produced has the same composition and characteristics as coal gas.

Of late, interesting work has been carried out by more than one gas undertaking in the United States in the direction of making horizontal retort settings more flexible in output by producing oil gas as well as coal gas in the retorts. The process increases the total gas-making capacity of the bench to a great extent, the equipment required is cheap, and for oil gas production practically no labour is required. Here again the oil gas is of approximately the same specific gravity and burning characteristics as average coal gas and the mixture of the two causes no trouble in the consumers' burners. For the small undertaking the procedure would, judging from the results in America, appear to be a good method of dealing with peak loads and regulating the coke market. One undertaking in the States has found that, by making oil gas in the top two retorts of a bench of six stop end retorts 9 ft. 3 in. in length, the capacity of the bench can be increased by 56%. The relative costs per therm of oil gas and coal gas must necessarily depend on the cost of raw materials, labour, and the return on tar and coke, but this particular undertaking has given figures which show that under its conditions, where cheap oil (4.3 cents per gallon) is available, the cost of oil gas is very little more than that of coal gas. This undertaking, the Michigan Fuel and Light Company, has applied for patents to cover the details of the process.

Actually, the procedure is very simple indeed. A preheated oil-steam mixture is blown from a nozzle at the front end of the retort through a duct of fireclay tile positioned at the centre of the retort. The gases and vapours then recirculate and find their exist at the standpipe. It is stated that, when properly controlled, the process can be operated indefinitely without carbon formation, and no trouble is experienced with standpipe, dampers, seals, &c. It follows, of course, that the condensing, purifying, and other ancillary plant must be capable of dealing with the added load, and the condensation of the surplus steam must to some extent increase the load on the cooling equipment. In any case, to cope with the demand the washing and purifying plant would have to be adequate whether dealing with coal gas or oil gas, and no expensive equipment is involved in the oil gas process.

At another works in the States the procedure is different. There the method is to introduce an atomized mixture of steam and oil into a retort over the coal charge after the top layer has attained the necessary reaction temperature for the production of oil gas. The oil-steam mixture is admitted to the retort two and a half hours after the coal is charged and is shut off about ten minutes before the coke is discharged. In this case the oil and steam atomizers are situated in the back wall of the bench. This works reports that since the installation was put into operation at the end of May last from 10,000 to 30,000 cu.ft. of oil gas has been made per day in addition to the regular production of coal-gas without any appreciable increase in the amount of fuel required to heat the setting, which in this instance also consists of stop-end retorts.

Accident and Health

THE Factories Act, 1937, came into force on July 1 of last year, so that the report of the Chief Inspector of Factories for 1938, which has just been published, covers a period including only six months' compliance with the new provisions. During these months there was great activity on the part of both inspectorate and employers, and the report states that the latter have with few exceptions fully accepted their new responsibilities and have shown a general desire to secure rapid compliance. In contrast to the two previous years there has been a distinct decrease in the number of reportable accidents, amounting in the case of all places under the Act to 6% for total and 7% for fatal accidents. For manufacturing industries alone these decreases extended to 10% and 12½% respectively. Accidents due to transmission machinery fell by 17%. It would seem that the safety requirements of the new Act, which are specially aimed at the prevention of the severe type of injury, have already begun to take effect.

There are many indications of greater interest in accident prevention generally. For example, the number of works known to have safety committees has increased from 1,246 in October, 1937, to 1,449 in December last. A safety committee which is active and responsible is a most effective way of combating accident incidence in large works, but it is not the only or sometimes even the most appropriate way. Much, for instance, can be done in many works by the appointment of a "safety officer" whose duty it is to see that fencing and other safeguards are properly maintained and to devote special attention to the promotion of safety in other ways. The report shows that the number of accidents occuring on hoists and lifts—one of the causes for which special provision has been made for the first time by the new Act—has decreased by 20%. In this regard more real progress was made during the last six months of 1938 than for many years past.

One chapter of the report deals with accidents to young workers, and in this direction also the results of special work are becoming apparent. Interest in the subject is more widespread, and what was formerly regarded as a matter primarily concerning the Inspectors of Factories is now recognized as a question of vital concern by education authorities. Measures are being taken designed to familiarize young people, while still at school, with the dangers attendant on the use of machinery. This should do much to ensure a reduction in the number of accidents. And apart from the instruction given by education authorities many young people are now given additional preliminary training in works schools connected with the factories in which they will subsequently be employed. It is clear from the figures given in the report, however, that if the number of accidents is to be reduced as far as is possible, the training and supervision of young persons will need to be extended beyond instruction in regard to the use of machinery. Account must be taken of the psychology of the juvenile mind. For instance, the report

Until further notice the Address of the "Gas Journal" and "Gas Salesman" Offices will be:

CLUNY LODGE, SANDOWN AVENUE, ESHER, SURREY,

Telephone No. Esher 747

to which all correspondence should be directed

mentions that inspectors are often told by managers and foremen that they are surprised that accidents occurred to particular boys because they were considered to be some of the smartest and most intelligent in the works. It goes on to say that this should cause no surprise to a works official with an understanding of young people for the intelligent boy is usually very inquisitive and eager to try out ideas of his own, and it is not infrequently the case that curiosity, ambition, or zeal lead to injury.

From the chapter in the report dealing with health it is seen that the number of notified cases of epitheliomatous ulceration from tar distilling, which includes those occurring in workers in this process carried out in gas-works, is much higher than in other workers in gas-works. One of the reasons why the figure for gas-works is small, it is suggested, may be that, except in the case of large undertakings, a voluntary periodic medical examination has not yet been adopted to the extent to be desired, and where it has been adopted treatment is given before the notifiable stage has been reached. One of the tables in the report shows that the age period in which there is the highest incidence in gas-workers not occupied in tar distillation is 51 to 60 years, whereas in tar distillers it is 41 to 50 years. It is satisfactory that workers who in the early days of voluntary periodic medical supervision looked upon it with no little suspicion are now learning to realize the benefits to be obtained from it.

Postponement of Meetings

North British Association

In consequence of the international position, the Annual Meeting of the North British Association of Gas Managers, which was to have been held at St. Andrews on Thursday, Sept. 7, has been postponed. All other arrangements made for that week have been postponed.

Wales and Monmouthshire Association

On account of the War it has been decided to cancel until further notice the Meeting of members of the Wales and Monmouthshire Association of Gas Engineers and Managers which had been arranged for September 21 at Porthcawl.

Women's Gas Council

The W.G.C. announced at the end of last week that the Summer School for Demonstrators, arranged to be held in Manchester from Sept. 1 to 5, had had to be cancelled. It is hoped that this will be only a postponement until early in 1940.

Forthcoming Engagements

Sept.

5.—**I.G.E.**—Sub-Committee on Processes Involving Flames or Glare of the Gas-Works Safety Rules Committee.
6.—**L.C.C.A.**—Advertising Sub-Committee, 2.45 p.m.
8.—**L.C.C.A.**—Coke Distributors' Branch Central Committee, 2.30 p.m.
12.—**N.G.C.**—Central Executive Board, 3 p.m.
18.—**L.C.C.A.**—Finance Committee, 10.45 a.m.; Executive Committee, 11.15 a.m.; Central Committee, 2.30 p.m.
19.—**I.G.E.**—Gas Education Executive Committee, 11 a.m.; Gas Education Committee, 2.30 p.m.; Gas-Works Safety Rules Committee, 2.30 p.m.
19.—**L.C.C.A.**—Technical Committee, 2.30 p.m.
21.—**S.B.G.I.**—Council Meeting, 11.15 a.m.
21.—**I.G.E.**—Refractory Materials Joint Committee, 2.30 p.m. (at Stoke-on-Trent).
26.—**B.C.G.A.**—District Conference at Stroud.
29.—**I.G.E.**—Liquor Effluents and Ammonia Committee, 11.30 a.m.; Joint Research Committee, 2.30 p.m.

Oct.

3.—**I.G.E.**—Research Executive Committee, 2.30 p.m.
5.—**B.C.G.A.**—South Wales District Conference at Neath.
6.—**I.G.E.**—Joint Committee on Complete Gasification under Pressure, 14, Old Queen Street, S.W. 1, 3 p.m.
9.—**I.G.E.**—Finance Committee, 1.45 p.m.; Membership Committee, 2.15 p.m.; General Purposes Committee, 3 p.m.; Benevolent Fund Committee of Management, 4.30 p.m.
10.—**I.G.E.**—Council, 10 a.m.
11.—**I.G.E.**—Board of Examiners, 2.30 p.m.
17.—**I.G.E.**—Gas Education Executive Committee, 2.30 p.m.

Letter to the Editor

Waterless Holders in War

Sir,—I have been in communication with Mr. R. L. Greaves, of St. Helens, regarding his waterless gasholder, and a wire he received on September 1 relating to his waterless gasholder storage.

He tells me that on that date he received a priority telegram under the Emergency Powers Defence Regulations, 1939:

"Purge St. Helens Waterless Gasholder."

He realized what this would mean to St. Helens if carried out, so he replied: "If this gasholder is shut off, I cannot guarantee continuation of supplies or safety."

This was confirmed to the Board of Trade by letter, and they replied: "Consult Hunter, Gas Light and Coke Co." He therefore phoned the Gas Light & Coke Co., and they replied that it was not a parallel case.

Mr. Greaves then reported to the Regional Commissioner at the Home Office, Manchester, and after explaining his difficulties, he was instructed to carry on at his own discretion.

He has therefore decided to utilize the storage in the waterless holder to a limited extent, and is making arrangements whereby, upon receipt of an air raid warning, he will lower the piston to within a few feet of the bottom, discharging the gas into his other storage vessels.

As an auxiliary precaution, he contemplates fixing a gas discharge pipe, controlled by a valve, to the outlet of the waterless holder, which in case of a special emergency would discharge the gas he is unable to store 100 ft. above the ground line.

I have Mr. Greaves' permission to make public this information, which I thought would be of considerable service to users of waterless gasholders.

Yours, &c.,
JOS. W. SCOTT.

Gas Plant Works, Manchester.
September 4, 1939.

Personal

Mr. and Mrs. John Rogers, of Knighton, have just celebrated the 67th anniversary of their wedding. Mr. Rogers will be 92 in December and Mrs. Rogers 85. For 44 years Mr. Rogers was Manager of the Knighton Gas Company, during the greater part of which period he was also in charge of the local water undertaking. One of his sons, Mr. F. Rogers, is the present Manager of the Knighton Gas Company.

* * *

The wedding took place at Whalley Road Congregational Church, Accrington, on Aug. 30, of Mr. Leonard L. Johnson, son of the late Mr. and Mrs. Johnson, and Miss Irene Broughton, daughter of Mr. and Mrs. Broughton, King Street, Accrington. The numerous presents included a silver tea service from Directors of Economic Gas Boiler Company, Burnley, the bride being a member of the staff.

Obituary

Mr. JAMES WALKER, for many years Chairman of the Markinch Gas Light Company, died on Aug. 21. He served on Markinch Town Council for twenty-one years.

* * *

The Chairman and Directors of the Imperial Continental Gas Association announce with the deepest regret the sudden death of their Deputy Chairman and Managing Director, Mr. F. H. JAMES, which occurred on Monday, August 28.

War Time Addresses

Readers are advised to make a note of the following changes of addresses which have been necessitated by the commencement of hostilities:

Blagden, Victor & Co., Ltd., Cecils, Chigwell, Essex. 'Phone: Chigwell 56.
Gas Chambers & Coke Ovens, Ltd., Groombridge, nr. Tunbridge Wells. 'Phone: Groombridge 16.
THE "GAS JOURNAL," Cluny Lodge, Sandown Avenue, Esher. 'Phone: Esher 747.
Holmes, W. C., & Co., Ltd., London Office, 19, Surbiton Hill Park, Surbiton, Surrey. 'Phone: Elmbridge 3820.
Humphreys & Glasgow, Ltd., Winkfield Manor, Ascot, Berks. 'Phone: Winkfield Row 101.
Society of British Gas Industries, "Uplands," Epsom Road, Guildford. 'Phone: Guildford 3267-8.
West's Piling & Construction Co., Ltd., Bath Road, Harmondsworth, West Drayton, Middlesex. 'Phone: West Drayton 2375.
Woodall-Duckham Vertical Retort & Oven Construction Co. (1920), Ltd., "Uplands," Epsom Road, Guildford. 'Phone: Guildford 3267-8.

News of the Week

Glasgow Corporation agreed on Aug. 31 to increase the price of gas by 2d. per 1,000 cu.ft.

The New Langside Lighting Control Station, recently erected by Glasgow Corporation, was formally opened on Sept. 1 by Bailie R. Y. Gemmell, Convener of the Sub-Committee on Fire Brigade and Lighting.

W. C. Holmes & Co., Ltd., announce that their London Office has temporarily been transferred to the following address: C/o Mr. S. G. Watson, 19, Surbiton Hill Park, Surbiton, Surrey. Telephone: Elmbridge 3820. All correspondence in connexion with Elex Precipitators, Jaffhor Dust Extractors, should be addressed to Mr. E. M. Lake, 73, Hinds Road, Harrow, Middlesex. Telephone: Harrow 0373.

At a Meeting of the Bethesda (North Wales) Council a letter was read from the Ministry of Health stating that, following the inspection of the gas-works by their Engineer, they were willing for the Council to float a loan of £1,110 in order to modernize the works on certain conditions. One was that the Council should consider the advisability of selling the undertaking if they were offered the sum of £3,000 by a private concern.

Permission to Borrow £8,612 for the erection of new offices at the Doncaster Gas-Works has been given by the Minister of Health, while terms for the purchase of land and buildings on Dockin Hill Road required in connexion with the extensions have been agreed. A loan is also to be raised to cover the tender of Messrs. Clayton, Sons & Co., of Leeds, for providing and erecting a new gasholder.

First Prize in the Trade Cars Class at the Herne Bay Carnival on August 24 was awarded to the entry of the Herne Bay Gas Company.

Estimated to Cost £60,000, a new continuous vertical retort plant is to be installed at the chief works of the Peterborough Gas Company in New Road, Peterborough. The new plant will be able to deal with 133 tons of coal a day.

A Special Order for which the Newcastle-under-Lyme Corporation Gas Department intend to apply to the Board of Trade under the Gas Undertakings Acts, 1920 to 1934, provides for the Undertaking to enter into an agreement with the Birchenwood Coal & Coke Company, Ltd., of Kidsgrove, for the purchase of coke oven gas in bulk. The latest available figures show that the Newcastle-under-Lyme Gas Department have an annual make of 385 million cu.ft. and supply some 17,200 consumers.

Home Tidings, the quarterly magazine of the Manchester Branch of the Women's Gas Council, maintains in its September issue, just published, the usual high standard of interest and value. Miss M. Robinson, the Organizer of the Branch, spares no pains to fill this well-produced periodical with entertaining and useful matter. Of particular interest in this issue is an illustrated article by one of the members showing how she has solved the problem of smoke abatement in her own bungalow in a practical manner with the aid of modern gas appliances. The usual selection of useful hints and recipes are also included in the September number, while a novel feature is a snapshot competition for amateur photographers.

Fuel and Lighting Order, 1939

Scheme of Rationing

Among the Orders made by the Secretary for Mines is the Fuel and Lighting Order, which comes into force on Sept. 7. This Order has been made to conserve supplies and provide against shortages due to local dislocations, the quarterly consumption of coal, gas, and electricity by domestic consumers and small industrial consumers will be limited to 75% of the quantity consumed in the corresponding quarter of the year ended June 30, 1939. This percentage may be varied only by the Secretary for Mines. The Order will be administered through local fuel overseers and local advisory committees of supplying interests.

The Order provides for the consideration of special cases by the local fuel overseer. For example, special consideration would be given to an increase in the number of occupants of premises arising from evacuation arrangements.

No consumer of coal will be rationed below two tons per annum, and small consumers of less than two tons per annum will not be required to register; but must obtain from the local fuel overseer a certificate which they must produce when they purchase coal.

The rationing percentage of 75% will also be applied to the consumption of gas and electricity, but consumers will not be rationed below 100 therms of gas and 200 units of electricity in a year, and consumers who, in the year ended June 30, 1939, consumed less than those quantities will be entitled to consume up to those limits.

Two special provisions for electricity consumers are:

(1) Prepayment consumers taking supplies at the lighting flat rate are exempt from rationing.

(2) Where premises have no means of cooking otherwise than by electricity the minimum ration of 200 units is increased to 1,000 units, provided the consumer applies for this increase.

Copies of the Orders are obtainable from H.M. Stationery Office, York House, Kingsway, London, W.C.2, either direct, or through any bookseller.

The above Order covers coke and manufactured fuel as well as coal.

A.R.P. Notes

Screening of Factory Lighting

A Joint Committee of the Illuminating Engineering Society and the Air Raid Precautions Department of the Home Office has had under review conditions limiting the amount of light directed upwards and outwards from Factory Buildings. It has borne in mind the experiences of other Committees concerned with A.R.P. lighting whose work was based on the suggestion that the minimum illumination permissible out of doors would be 0.002 ft. candles, and the minimum permissible in certain circumstances if capable of extinction in emergency, 0.02 ft. candles. In view of this experience it has formed the following conclusions:

That effective and adequate illumination for the carrying on of work in factories is only practicable on the assumption that means are provided to screen completely, by opaque materials, any visible upward and outward emission of light through the windows of the buildings.

In framing these conclusions the Committee took into consideration methods of complementary light—*i.e.*, restriction of the illuminant to a certain distinctive colour and the application to the window glass of a coating in another colour complementary to that of the illuminant, with a view to preventing any emission of light through windows. It formed the opinion that at the present state of development such a system cannot be recommended for general adoption. Investigation is proceeding, and this recommendation will be reviewed when the results are available.

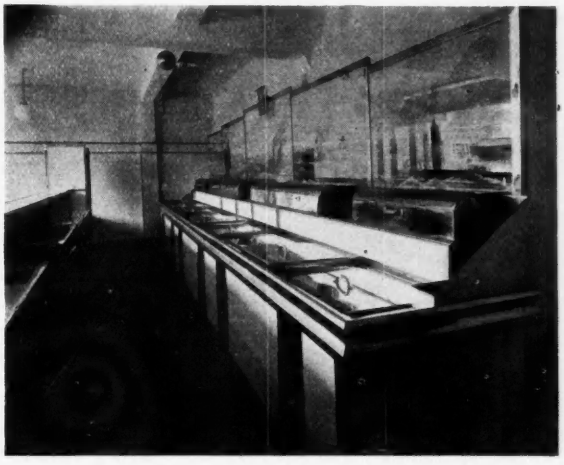
This installation of Parkinson heavy-duty gas appliances has lately been fitted in the kitchen of the King's Heath Institute, Birmingham. The Parkinson "Unita" Cookers are seen side by side, and a Parkinson fish-fryer is incorporated

A Large Fish-Frying Installation

What is believed to be the largest gas-fired fish-frying range in the South of England has lately been installed in the area of the South Suburban Gas Company at the establishment of F. J. Percy and Son at Wellington Parade, Blackenfen Road, Sidcup. Through the courtesy of the South Suburban Company we are enabled to give the following particulars and illustrations of this interesting installation

THE proprietor of the firm is a man of many years experience in the fish-frying trade, and is an enthusiastic advocate of gas-firing for these ranges. He has backed his opinion by recently installing the largest complete frying range yet manufactured by the firm of G. Mallinson & Son, Ltd., of Oldham. This necessitated his acquiring adjoining premises and converting two shops into one large establishment with a frontage of 36 ft. The range is fitted on the back wall of the shop and is 19 ft. long. It is a really fine piece of workmanship.

It has six pans, each 24 in. by 24 in. by 9 in. heated by Davis No. 200 burners with pilots and fitted with the latest Mallinson economic housing principle. There are three large self-draining chip boxes, six large fish warmers, and three scrap boxes embodied in the range. The entire traywork and covers are a true example of craftmanship in stainless steel, and the whole is surmounted by an artistic "Vividek" glass back in decorative seascape design. The gas products are taken away by individual pipes to a centre flue, and the steam is extracted by a powerful Keith-Blackman fan to a secondary flue. Each pan has its own individual damper to control the amount of steam extracted.



In front of the range is another fine piece of workmanship by G. Mallinson & Son, Ltd.—namely, the counter, which extends across the entire 35 ft. width of the shop. This counter, constructed entirely on a steel frame, is finished in Vitrolite glass and stainless steel. It has chipping screens at each end and swing doors to the walls.

Quick Change-over

It is interesting to note that the old three pan range and counter were dismantled and taken out, and the new range, counter, steam extractor, &c., completely fitted without losing a single moment of cooking time. The actual change-over took place between 2 p.m. and 5.30 p.m. The range-maker's man carried out the dismantling and erection, but the gas connexion was dealt with by the South Suburban Company. This involved the fitting of a 1,200 cu.ft./hr. meter, by-pass, and governor, all of which were ready for coupling up while gas was maintained continuously to the old range. This was only made possible by the able co-operation of the Mains and Service Department, and the Company have been congratulated by the manufacturers and also by Mr. F. J. Percy.

It may be said in conclusion that Mr. Percy certainly deserves all the success that he is achieving, as his unswerving rule is to give the public the best. Nothing but the finest fish, potatoes, and flour is ever used, and such is his reputation that he is now handling no less than six tons of potatoes a week.

Gas Undertakings' Results

Cork

Submitting to the proprietors the accounts for the half year to June 30 last, the Directors of the Cork Gas Consumers' Company state that, after placing £1,921 to credit of the Depreciation Fund, the balance of profit and loss is £4,386, with which they propose to pay the usual dividend at the rate of 8% per annum. The Company are proposing to apply for a Special Order to authorize them, among other things, to increase the area in which they may maintain works for the manufacture and storing of gas, &c., and to supply or purchase gas in bulk. The Directors are unanimously of opinion that it would be in the best interests of the Company to fill the vacancy on the Board caused by the death of Mr. James G. Dowdall by the appointment of Mr. Richard Healy (who has been the Company's Secretary since 1920), while still retaining him in the office of Secretary.

Glasgow

During the year to May 31 last the quantity of gas delivered and accounted for by the City of Glasgow Corporation Gas Department amounted to 9,905,054,117 cu.ft., which compares with 9,331,619,913 cu.ft. for the preceding year—an increase of 573,434,204 cu.ft., or a little over 6%. The Department's coal bill has been increased in five years by £190,680—more than 5s. 3d. per ton. The Industrial Heating Section has been very active during the year. At May 31, the number of meters in use was 338,533, as compared with a total of 336,513 twelve months ago—or an increase of 2,040. Ordinary type meters show a decrease of 3,026, while those of the prepayment type have increased by 5,066. The number of gas cooking appliances on hire and free loan at May 31 was 241,163, as against 239,466 a year ago. The average price received per 1,000 cu.ft. of gas sold was nearly 1d. less at just over 2s. 6½d. On the financial side, the accounts show a deficit on the year's operations of £131,961, as against a deficit for the preceding year of £52,324. Last year's deficit reduced the surplus brought in to £87,213. Thus the deficit carried forward to 1939-40 is £44,747.

Morpeth

An increase in the sale of gas exceeding 3,000,000 cu.ft. for the twelve months ended June 30 is recorded by the Morpeth Gas Light Co. (1902), Ltd. Out of the sum of £5,184 available, the Directors recommend the payment of a dividend of 6% for the year on the ordinary shares, and after writing off £1,124 for depreciation there will remain a balance of undivided profit of £1,774 to be carried forward. Having regard to the expansion of the business involving increased expenditure on Capital Account, the Directors decided to issue a series of £50 debentures bearing interest at the rate of 4%. The Company are applying to the Board of Trade for a Special Order.

A.R.P.

And Your

SHOWROOMS

by

WILLIAM R. OLIVER

(Display Officer to the B.C.G.A.)

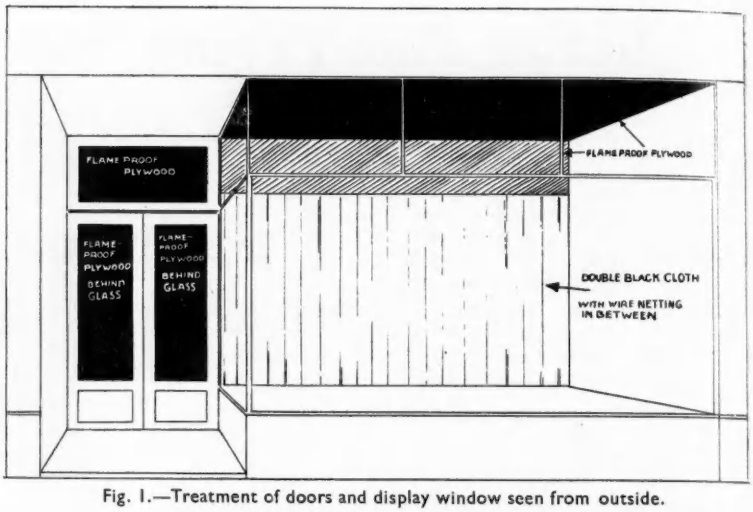


Fig. 1.—Treatment of doors and display window seen from outside.

THE Lord Privy Seal's Department have issued a very important statement with regard to shop windows. This statement emphasizes the urgency of taking immediate steps to ensure that all internal lighting can be made entirely invisible from outside and that all external lights, including advertisement signs, can be extinguished at once. No internal lighting whatsoever to be visible from outside at any time, and all external lighting has to be permanently extinguished.

As long as a showroom or shop remains open for business, the strictest precautions will have to be observed to see that the opening of the showroom door does not allow any escape of direct or reflected light. It is suggested that some form of light-trap should be constructed of plywood, millboard, curtains, or other suitable material, with entrances and exits so arranged at each end that light is trapped within the passage thus formed. Where the showroom doorway is set back, a false doorway could be built in the available space at the entrance.

The question of actual window displays is also dealt with in the statement, and it is pointed out that where these are maintained it must not, of course, be possible for them to be illuminated at night, and that it is necessary to make sure that the back partition separating the display space from the interior of the showroom is made absolutely light-proof. Glass roofs and sky-lights, too, must be painted or adequately screened. Mention is made with regard to the use of paint on glass to the effect that the shattering of glass would, at the same time, destroy obscuration.

Solving the Problems

That is the position in which we find ourselves to-day. The most simple method of complying with all these restrictions would naturally be to close up the showrooms altogether—but as this is, of course, entirely out of the question, we must solve these problems in such a way that the functioning of the showrooms' business activities will go on just the same and as near to peace time conditions as possible. Trade will go on, and shops whose windows continue to be dressed in a bright and cheerful manner, whether to display goods or schemes of national propaganda, will be doing a great service for their country, by assisting to maintain the confidence and morale of the public.

During the September crisis I urged the Gas Industry to utilize their showroom windows for the display of A.R.P. posters. The response was magnificent, and I feel sure that gas showrooms throughout the country will once again set a "confidence" lead by maintaining their window displays.

The recent war in Spain has provided us with much valuable data and concrete evidence regarding precautions to be taken with glass during bombardments from land or air, so that the danger of splintering glass is reduced to a bare minimum. At the outset, I would suggest that windows, glass screens and partitions, which are not necessary for the admittance of light, or are not required for display purposes, should be entirely pasted over with black paper —the pasting of paper on glass helps to prevent splintering. Large mirrors should be treated in a like manner.

Windows which are situated on exterior walls should be reinforced with wire-netting secured in position about an inch away from the inside of the glass. This wire-netting can then be obscured with suitable curtains or draping material—I would urge that all sky-lights are certainly treated in this manner.

STEPS WHICH SHOULD BE TAKEN WITHOUT DELAY

The Window

Now for the window! There are numerous ways in which your plate glass window can be treated to minimize splintering, and some of these methods can be made to look very attractive and effective. By far the most simple way is the use of double crown posters and window strips together with connecting strips of strong coloured paper pasted on the inside of the window.

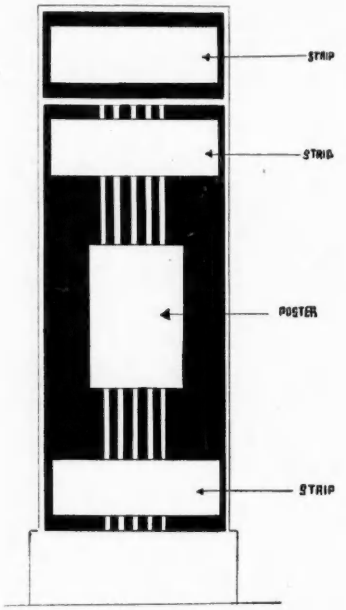


Fig. 2.—Anti-Splinter Treatment for Small Window.

In Spain it was found that one of the most effective treatments for window glass, designed to lessen the splintering danger, was to paste strips of paper across the inside of the glass, and it did not take long for the Spanish shopkeepers to become adept in the creation of many attractive and ingenious window pictures made up in this way. Fig. 5 will give you an

idea of what can be done to combine precaution with attractiveness in this respect.

I think the best method of ensuring complete obscuration of light from the interior of the showroom is to construct a

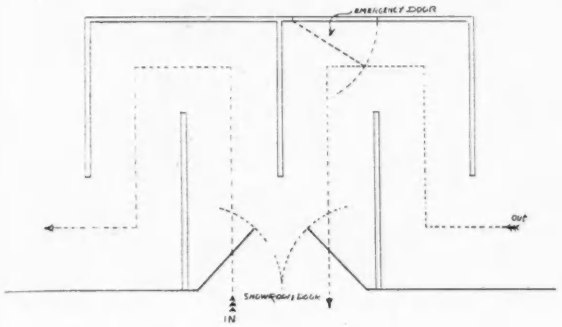


Fig. 3.—Plan of Light Trap.

false background to cover the entire spread of glass (see Fig. 1). This could take the form of a substantially constructed framework covered back and front with flame-proof plywood. A double thickness of light-proof cloth to form the lower part of the background should be hung approximately 6 ft. from the floor of the window; this would facilitate the dressing and arrangement of the window displays.

It is possible that you may prefer to substitute removable flame-proof plywood panels instead of the cloth half of the background, and should this be the case, be sure that they are securely held in position. Where cloth is used, wire-netting should also be fixed to the framework, further to guard against flying splinters of glass entering the showroom. As an extra precaution, wire-netting could be fixed over the whole of the wooden frame-work and would be entirely obscured from the public view when the plywood was nailed into position over it. A false background of this description could be painted any desired colour scheme, but should cloth be used for the lower half of the window, the material should be black—double thickness, with wire mesh in between.

It may be advisable completely to black out certain small side windows, and Fig. 2 will give an idea for doing this and

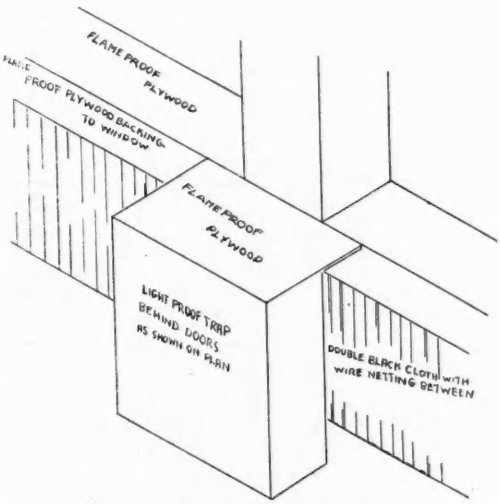

FLAME PROOF PLYWOOD
FLAME PROOF PLYWOOD BACKING TO WINDOW
FLAME PROOF PLYWOOD
LIGHT PROOF TRAP BEHIND DOORS AS SHOWN ON PLAN
DOUBLE BLACK CLOTH WITH WIRE NETTING BETWEEN

Fig. 4.—Light Trap seen from Inside Window.

at the same time making the glass as attractive as possible. I suggest that posters and paper strips are pasted firmly to the inside of the window glass and then both glass and back of poster covered with good quality black paper.

Once the window has been dressed and the false background made entirely light-proof, it need not be disturbed, except for the daily dusting routine, and entrance to the window for this purpose can be made by removing sufficient cloth and wire mesh to enable the window dresser to squeeze through.

A Light Trap

To be perfectly certain that the opening of the showroom door does not lead to any escape of direct or reflected light may prove a rather difficult problem to overcome in a number of instances, as no standard type of light-trap can be designed to fit in with the architectural variations of showroom entrances. However, in Figs. 3 and 4 I give a plan and elevation of an effective light-trap which, I am sure, will provide a simple, yet completely reliable, method of overcoming this obstacle.

The framework is constructed and treated as outlined for the false window background and the whole structure painted black to prevent the reflection of light. It will be seen that the outer door must be closed before the showroom is entered through the curtain, so therefore in all probability it will be necessary to have someone permanently in attendance during the time that the showroom is open to ensure that this precaution is efficiently carried out.

Where space would permit, an outer and an inner light-trap could be constructed which would be of such an efficient nature that it would completely overcome the necessity of employing a permanent door attendant.

A number of alternative schemes for the construction of light-traps have been prepared by a Sub-Committee of the Illuminating

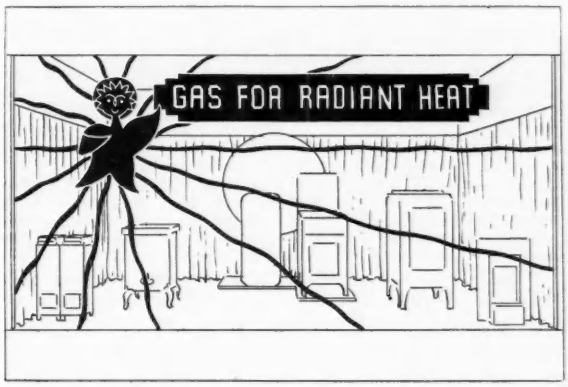


Fig. 5.—Attractive and Anti-Splinter Treatment for Display Window.

Engineering Society under the ægis of a Joint Committee of the Society and the Home Office A.R.P. Department; this specification has been published by the British Standards Institution as BS/ARP. 15.

The B.C.G.A. Studio has a limited stock of materials available for members' use for the construction of window backgrounds and light-traps. An ample supply of double crown posters, window strips, and coloured papers is also available for the production of the special glass treatments as outlined in this article, and the individual problems and requirements of members will be dealt with in the Studio's usual prompt manner.

British Standard Specifications

The following British Standard Specifications (A.R.P. series) have been issued by the British Standards Institution at the request of the Air Raid Precautions Department of the Home Office:

BS/ARP 1.—Aggregates for concrete shelters constructed *in situ*.
BS/ARP 2.—Bituminous paint and bituminous compound for the protection of steelwork.
BS/ARP 3.—Electric hand-lamps.
BS/ARP 6.—Shelter lighting.
(In collaboration with the Illuminating Engineering Society.)
BS/ARP 15.—Light locks for shop entrances.
BS/ARP 16.—Methods of providing even illumination of low intensity.

Copies of the above Specifications can be obtained (price 3d. each post free) from the Secretary of The Institution of Gas Engineers, or direct from the British Standards Institution, 28, Victoria Street, S.W.1.

HEAT ECONOMY IN NORWAY

The question of the Supply of Heat and Power in Norway is entirely different from that in Great Britain. The mere fact that Norway possesses no coal and abundant supplies of water power, while the reverse is the case in Great Britain, immediately explains this fundamental difference. The following notes are taken from an article which appeared in the July issue of *West's Gas*

The staffs and showrooms of the Bergen Gas and Electricity Undertakings are now housed in a new administrative building. The attractively modern exterior design is shown above

TAKING into account that practically all house heating is done by coke, the quality of this product is of the utmost importance, and coke is consequently handled with the greatest care. After leaving the retorts, the coke is brought to an up-to-date screening plant by rubber belts and separated into a number of different sizes to suit the requirements of the various classes of consumers. Quite a considerable proportion is sold for central heating boilers requiring large coke, while smaller grades are sold for stoves of various types, the size of the coke required for each type of stove depending upon the depth of fuel in each stove. Coke is screened a second time immediately prior to being bagged, thus removing traces of dust formed in the coke hoppers and coke pieces not of standard size.

In Norway coal is not burned in open fires, this being considered too wasteful, besides which the contamination of the atmosphere by coal smoke would not be tolerated. Most private houses are heated by coke stoves giving a very high efficiency. Practically all modern stoves are designed to "burn round" from autumn to spring. The only attention required is to fill up with coke and shake the grate morning and night, and a type of coke must therefore be supplied which does not form clinker, or the fire would go out and customers would cease buying our coke. Larger premises are heated by central heating.

Gas is principally sold for cooking and water heating. A few people have installed gas fires—and find them very convenient—but many people, strange as it may sound to English readers, dislike the strong, direct radiant heating of the gas fire. Curiously enough, many Norwegians say, "it is as uncomfortable as an open coal fire where you get roasted on one side and chilled on the other." Heating experts in Norway do not yet realize the value of the short infra-red rays as compared with the stuffiness-producing dark rays of ordinary radiators.

There has recently been an increased tendency to install gas-fired central heating equipment in private houses, and, in fact, we have received enquiries for more installations than we dare to take on, as central heating by gas gives a rather uneconomical load due to the high peaks. In this respect heating by gas suffers from the same drawbacks, from a producer's point of view, as heating by electricity, although to a smaller extent, the chief reason why electric heating is uneconomical being the excessive plant required to deal with peak loads during cold spells.

Gas stored in holders will also suffice for short spells only, and it is a costly business to keep an excessive number of settings under fire as a precautionary standby against cold spells which may not materialize. We have come to the conclusion, therefore, that gas sold for house-heating must amount to a certain limited percentage only of the total gas sold and that gas sold for cooking is, and must be, the backbone of our sales and income. Fortunately for us gas is in increasing favour in wide circles, thanks to the many excellent gas appliances on the market to-day.

From the economic point of view then, gas sales in Norway may be classified as follows:

Of first importance: cooking load and water heating load.

Of second importance: industrial load.

Of third importance: house-heating load.

The cooking load is a fairly even load sold at comparatively high price, but we are often prevented by local authorities from introducing promotional tariffs which would increase the remunerative cooking load, while the electricity department is encouraged to offer tariffs competing with the gas cooking load.

The industrial load is a fairly even load. But gas for this load must be sold at a cheaper rate. Even then it is a valuable load for the gas-works as long as the quantity of gas sold does not exceed a certain percentage compared with the cooking load.

The house-heating load by central heating is of more doubtful value due to its non-existence in the summer-time and the heavy peak loads in the winter time.

The bugbear of the Gas Industry to-day is the large number of small unremunerative customers requiring an outlay exceeding their total payment for gas, which tends to make gas more expensive for the normal customer. This is, to some extent, counteracted in our town by the rule introduced some years ago of charging a monthly minimum amount whether gas for that amount is used or not.

For some years we have had in force a number of two-part tariffs for industrial purposes, and these have proved very useful from a promotional point of view. The introduction of the most ideal and just tariff for cooking has been retarded by objections of a more political nature actuated by the fear that this might delay the introduction of electric cooking. This is an unfortunate tendency prevalent in practically all Norwegian towns.

The most important work of the Gas Manager in Norway to-day, therefore, is to educate the public and convince them of the economic advantages of using gas and the advantages to the country of promoting the sale of home-produced coke.

The showrooms and administrative offices of the Bergen Gas Undertaking have moved into a new building where billing and accounting are carried out jointly with those of the electricity department. This latter procedure has met, however, with certain practical difficulties which it is hoped will be of a temporary character. According to our experience so far, it seems a simpler, more efficient, and more economical way to keep the accounting and billing departments of gas and electricity concerns separate. Time will show which is the better way.

"Gas Journal" Directory

In order that readers may be able to keep the particulars contained in the "JOURNAL" Directory up to date, we summarize in the following list changes of which we have been notified during the past month:

Page 6. BEDFORD. J. B. Hansford, D., E., & M., retired.

„ 24. ELLAND. R. Hornby Porter, S., deceased.

„ 40. LEEK. D. K. Green appointed E. & M. vice D. McEwen.

„ 50. NEWTON-IN-MAKERFIELD. W. T. Hainsworth appointed E. & M.

„ 80. AUCHTERARDER. H. Tanner appointed E. & M.

„ 88. KIRKCONNEL. H. Tanner, M., resigned.

„ 96. COLERAINE. H. C. Harrison appointed E. & M.

A New Shock-Resisting Steel

During the past decade designing engineers have constantly been searching for steel castings with better mechanical properties than those laid down in the British Standard Specifications. As the tensile strength increased, the ability to withstand shocks decreased, with the net result that a comparatively mild steel had to be used for any component subject to stress. This was the bugbear of designers who desired to make use of the greater strength of high-tensile steels, but who were prevented from doing so by the ever-present fear of sudden fracture.

READERS will no doubt recall that the firm of Kryn and Lahy (1928), Ltd., of Letchworth, Herts, placed on the market some years ago castings of a material known as K.L. "Stronger Steel." This metal combines the strength of high tensile steel with the ductility of mild steel, and carries the following three-fold guarantee:

Tensile strength: 35/40 tons/sq. in.

Elongation: At least 20% on the usual B.S.S. Test Piece.

Cold Bend Test: To an angle of at least 120° on the B.S.S. Test Piece without fracture.

It may be said that K.L. "Stronger Steel" has firmly established itself during the past few years and has proved its merits in a large number of applications. Notable among these are ships' davits and some 8,000 railway wheel centres—*i.e.*, the whole of the wheel with the exception of the tyres and flanges—for the London Passenger Transport Board's new Underground vehicles, in both of which instances weight has been saved without sacrificing strength.

And now Messrs. Kryn and Lahy have taken another step towards satisfying the needs of the designer for a steel of even higher qualities than that to which we have just referred. As a result of intensive research during the past two years, the firm have placed on the market their K.L. "High Shock" steel. This is a modification of the "Stronger Steel" and shows, in addition to the properties already enumerated in the latter, a yield point of 60% or more of the ultimate tensile strength and a resistance to shock (by Izod Tests) of not less than 20 ft.lb., which is two or three times the normal figure for carbon steel castings of this tensile strength.

Applications Within the Industry

These additional properties are obtained, moreover, without the necessity for drastic heat treatment. The applications for such steel are almost boundless, but those in the Gas Industry which come most readily to mind include, of course, framework for mechanical screens (which are subjected to continuous shock over extended periods), castings for excavators, cranes, and mechanical shovels as are extensively used in the Industry, teeth and framework of crushers and cutters, as well as many other uses in which steel is subject to regular shock and stress. It is needless to add that the higher yield point will give the designer further scope for saving weight.

Among other applications to which the new "High Shock" steel has already been extended are automatic couplers for railway rolling stock, while certain ships' davits for special duties have recently been passed by the authorities for a further increase of up to 15% loading for the same frame size.

Test Results

We had the opportunity of visiting Messrs. Kryn and Lahy's Letchworth Works a few days ago where, in addition to seeing the up-to-date plant and processes which the firm employ in the production of their high-grade steels, we witnessed a typical test carried out on a "High Shock" steel B.S.S. Test Piece of 0.564 in. diameter by 0.25 sq.in. area. To give some idea of the results which such tests show, we reproduce below the figures obtained in an official test carried out last January under the supervision of representatives of the Board of Trade and Lloyd's Register of Shipping:

Test Piece Number.	Date Stamped.	Ultimate Breaking Point Tons.	Tensile Strength Tons Per sq. in.	Elongation per cent. on 2 in.	Yield Point Tons per sq. in.	Yield Ratio.	Bend Test Angle.	Remarks.
1	10.1.1939	10.0	40.0	27.0	28.0	70.0%	120°	Without fracture.
2	"	9.95	39.8	25.0	27.6	70.0%	120°	"

BRINELL TEST.

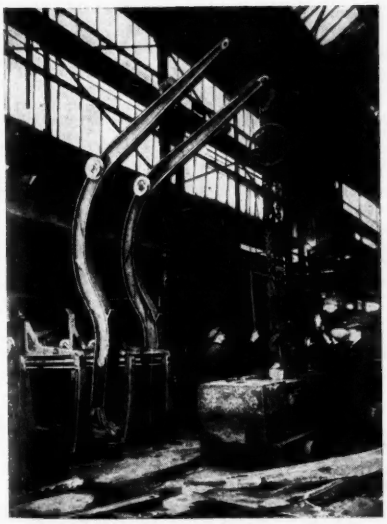
Dia. of Impression.	Brinell No.	Approx. tons/sq. in.
4.50	179	39.0

IZOD TEST.

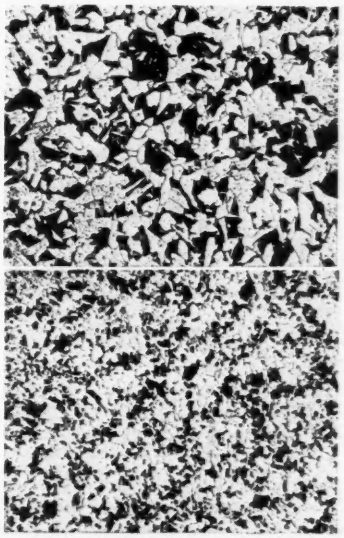
Dia. of Bar.—.45 in. with 3 Notches.

1st Notch—43 ft. lb.
2nd " —39 "
3rd " —40 "
} Average of 3 Notches—40.66 ft. lb.

The high tensile strength and exceptional ductility in conjunction with the shock-resisting qualities of this new steel constitute ample confirmation of the claims for the reduction in size of parts which can safely be made. Many new processes are heralded as "revolutionary"; but the term with some justification can be applied to this development.



Ships' Davits made of K.L. "High Shock" Steel, shown on Test at works. The use of this material has enabled the load to be increased for the same [frame] size.



Micro-photograph of ordinary 35/40 ton tensile Steel, annealed.

Micro-photograph of K.L. "High Shock" Steel (annealed) showing smaller grain size.

Shock Cooling at Coke Ovens

Extract from the Alkali, &c., Works Report for 1938

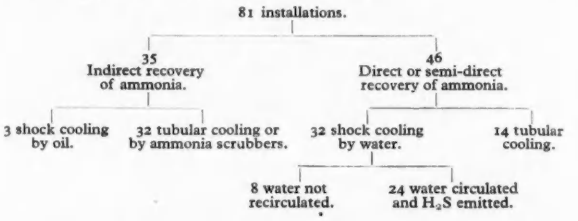
In brief, shock cooling at coke ovens consists in cooling the warm crude gas by bringing it into direct contact with a shower of water. During the process of cooling some hydrogen sulphide is dissolved out of the gas and leaves the system as a dilute aqueous solution. So far no harm is done; the trouble arises in the next stage when the used water is pumped to an open frame down which it is sprayed counter current to a rising stream of air. The upgoing air while cooling the water also disengages some of the dissolved hydrogen sulphide and leaves the tower top in a contaminated state, thereby causing an objectionable odour in the vicinity. The concentration of the hydrogen sulphide varies, but normally it is sufficiently high to cause complaint.

Shock cooling is not a new practice, but it has become more prominent with the present-day large coke works often in congested areas. The recirculation of water is used in some cases to meet the difficulty of river pollution, but the solution is not a satisfactory one if its effect is to transfer pollution from the rivers to the atmosphere.

The shock cooling system follows the sulphate of ammonia plant, and it is submitted that an escape of noxious gas constitutes an infringement of Section 7 (1)* of the Act whether it be via the shock cooler or any other means unless it can be shown that such escape is unavoidable—that is to say, that the best practicable means are employed to prevent the escape.

In connexion with the latter point, inquiries have been made at coke ovens (at which ammonia is recovered) to ascertain what means of final cooling are employed.

Analysis shows that of the 81 coke oven installations under inspection, 35 practise indirect ammonia recovery. Of these, three employ shock cooling by means of oil and 32 employ tubular cooling. The remaining 46 installations practise either direct or semi-direct ammonia recovery. Fourteen employ tubular cooling and 32 shock cooling by water, but eight of the latter do not recirculate the water, which leaves 24 with more or less offensive emissions from the cooling frames. The position is shown diagrammatically below:


81 installations.
35
Indirect recovery of ammonia.
46
Direct or semi-direct recovery of ammonia.
3 shock cooling by oil.
32 tubular cooling or by ammonia scrubbers.
32 shock cooling by water.
14 tubular cooling.
8 water not recirculated.
24 water circulated and H_2S emitted.

Thus, only 24 out of 81 installations (or 29.6%) are employing methods to which objection is taken. If only those 46 installations are considered at which direct and semi-direct ammonia recovery is practised, the proportion is 52%. The offending works are therefore in a minority and it is impossible, in these circumstances, to accept the view that the noxious emission is unavoidable. Alternative means are available and practicable, although the difficulty of altering an existing plant is fully appreciated. In the case of new installations, however, there is no such difficulty and certificates of registration in respect of sulphate of ammonia plants associated with direct coolers will be issued only on the condition laid down in Section 9 (5) of the Act—*viz.*, that the work is at the time of registration furnished with such appliances as appear to the Chief Inspector or, on appeal, to the Minister of Health to be necessary in order to enable the work to be carried on in accordance with the requirements of the Act.

Although the question has been the subject of free and frank argument, many of the responsible officials at coke ovens where shock cooling (and recirculation) is employed admit that the practice does give rise to offence and many attempts are being made to overcome the difficulty, as to the ultimate solution of which there is little doubt.

* Section 7 (1). The owner of any work specified in the First Schedule to this Act shall use the best practicable means for preventing the escape of noxious or offensive gases by the exit flue of any apparatus used in any process carried on in the work, and for preventing the discharge, whether directly or indirectly, of such gases into the atmosphere, and for rendering such gases where discharged harmless and inoffensive.

Section 27. The expression "best practicable means" where used with respect to the prevention of escape of noxious and offensive gases, has reference not only to the provision and the efficient maintenance of appliances adequate for preventing such escape, but also to the manner in which such appliances are used and to the proper supervision, by the owner, of any operation in which such gases are evolved.

Gas-heated Hot Water Supply for School Buildings, Pavilions and especially **A.R.P.**

The advantage of water heating by Potterton's Patent Storage Apparatus with "Empire" and "Emperor" Boilers is fully recognised by the Middlesex County Council, to whom upwards of 50 Plants have been supplied during the past few years. Amongst the most important installations are the following, some of which incorporate Central Heating with "REX" Gas-Fired Boilers.

Twickenham Technical College.
Torbay Road School, South Harrow.
Carlton Avenue School, Wembley.
Tottenham Polytechnic.
Hewen Road School, Hayes.
Kenmore Schools, L.C.C. Estate.
The Walk, Potters Bar.
Wilmer Walk School, Southgate.
Hendon Technical College.
Stationers School, Hornsey.
Southall County School.
Wembley County School.
Thislecroft Gardens, Stanmore.
Greenford County Schools.
Baume Senior School, Ruislip.
Chiswick Polytechnic, Sports Pavilion.
Enfield Technical College.
Claremont Avenue Schools, Kenton.
Cannon Lane Schools, Pinner.
Stanmore Road School, Acton.
Laleham Estate Schools, Staines.
Cristol Park Schools, Wembley.
Frogmore Farm, Hayes.
Bacon Lane School, Kingsbury.
Tottenham Grammar Schools.
Grange Park Schools, Hayes.
Townfield Senior Girls' School, Hayes.
Wembley Park County Schools.
Willesden Polytechnic Sports Pavilion.
Willesden County Sports Pavilion.
Acton County Boys' School.
Acton Technical College annexe.

40 YEARS' EXPERIENCE IN GAS BOILER DESIGN

THOMAS POTTERTON (Heating Engineers) Ltd.
CAVENDISH WORKS, 20-30, BUCKHOLD RD., WANDSWORTH, LONDON, S.W.18
Telephone: Putney 2263-4-5 Telegrams: Potterton, Put, London.

Markets and Manufactures

Current Sales of Gas Products

The London Market

Sept. 4.

There are no changes to report in the values of tar products, which remain approximately as under:

Pitch, nominal at about 25s. to 26s. per ton f.o.b.
Creosote, 3½d. to 3¾d.
Refined tar, 3¾d.
Pure toluole, 2s. 5d. to 2s. 6d.
Pure benzole, 1s. 9d.
95/160 solvent naphtha, 1s. 7d. to 1s. 8d.
90/160 pyridine, 11s. to 12s.
All per gallon naked at makers' works.

The Provinces

Sept. 4.

Crude Gas-Works Tar, 10s. to 15s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 25s. to 27s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 25s. to 27s.* Toluole, naked, North, 1s. 10d. to 1s. 11d. Coal tar, crude naphtha, in bulk, North 7¾d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5d. Heavy naphtha, North, 1s. 2½d. to 1s. 3d. Creosote, *ex* works, in bulk, North, liquid and salty, 3⅝d. to 4⅛d.; low gravity, 4d. to 4¼d. Carbolic acid, 60's, 1s. 7d. to 1s. 10d. Naphthalene, £13 10s. to £16. Salts, 70s. to 75s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal, "B" quality unsaleable. Heavy oil: Unfiltered anthracene oil, min. gr. 1,080, 4¾d. to 4⅞d.; filtered anthracene oil, min. gr. 1,080, 5½d. to 5¾d.; heavy tar oil, gr. less than 1,080, 4½d. to 4¾d.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls, whatever they may be.

Scotland

GLASGOW, Sept. 2.

No change has taken place in prices during the week, but forward position is uncertain.

Crude gas-works tar.—Actual value remains nominal at about 26s. to 28s. per ton *ex* works in bulk.

Pitch of vertical quality is offered freely at about 20s. to 21s. per ton f.o.b. for export and 20s. per ton *ex* works in bulk for home trade.

Refined tar.—Home business is falling away, but price is unchanged at 3¾d. to 4d. per gallon. Export supplies can be secured at about 2½d. to 2¾d. per gallon, into buyers' packages at makers' works.

Creosote oil.—Makers' quotations are unchanged as follows: Specification oil, 3½d. to 3¾d. per gallon; low gravity, 4¼d. to 4½d. per gallon; neutral oil, 3¾d. to 4d. per gallon; all *ex* works in bulk.

Cresylic acid.—While prices are unchanged there has been a little more business from home consumers, who apparently are taking in stocks. Pale, 97/99%, 1s. 2d. to 1s. 3d. per gallon; dark, 97/99%, 1s to 1s. 1d. per gallon; pale, 99/100%, 1s. 4d. to 1s. 7d. per gallon; all *ex* works in buyers' packages.

Crude naphtha remains at round 5d. to 5½d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is 1s. 4d. to 1s. 5d. per gallon and 90/190 heavy naphtha is about 1s. 1¼d. to 1s. 2d. per gallon.

Motor benzole is 1s. 3d. to 1s. 4d. per gallon.

Pyridine.—Prices are nominal at 12s. to 13s. per gallon for 90/160 grade and 14s. to 15s. per gallon for 90/140 grade.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole ...	0	9½	to	0	10	per gall. at works
Motor ,, ...	1	3	,,	1	3½	,, ,, ,,
90% ,, ...	1	4	,,	1	4½	,, ,, ,,
Pure ,, ...	1	8	,,	1	8½	,, ,, ,,

Contract Advertised

Coal.

Shipley Gas Department. [p. 573.]

PROTECT WITH

METROTECT

a bituminous paint producing a pleasant satin black finish with highly waterproof and anti-corrosive properties.

Protects steel-work which is continuously or periodically immersed in water. Does not become brittle on prolonged atmospheric exposure. METROTECT flows freely under the brush and can be applied quickly and without effort even in cold weather.

Prices and further particulars from—

SOUTH METROPOLITAN GAS CO.

PRODUCTS DEPARTMENT,
REGIS HOUSE,
KING WILLIAM STREET,
E.C.4.

MODERN DESIGN—

MODERN

EQUIPMENT

Pressure producer equipment installed with Glover-West vertical retorts for the Leeds Corporation Gas Department (Meadow Lane Works)

West's carbonizing plants combine the features of present-day practice by which the most exacting requirements of retort house control and efficiency are met. The increased fuel economy realised by the introduction of pressure producer equipment is one direction in which the ideal of maximum results from the coal carbonized is attained.

WEST'S

WEST'S GAS IMPROVEMENT CO., LTD. MILES PLATTING, MANCHESTER 10
AND COLUMBIA HOUSE, ALDWYCH, W.C.2

GAS STOCKS AND SHARES

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week.
1,767,439	Mar. 6	8	8	Alliance & Dublin Ord. ...	130—140	...
374,000	June 19	4	4	Do. 4 p.c. Deb. ...	88—93	...
877,576	May 8	5	5	Asscd. Gas & Water U'd'ts Ord.	16/—18/–	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...
535,545	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	16/—18/–	...
318,730	,,	4	4	Do. 4 p.c. Irred. Cum. Pref.	15/—17/–	...
750,000	Mar. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	92—97	..
560,070	Aug. 21	7	7	Barnet Ord. 7 p.c.	148—156*	...
300,000	Apl. 6	1/4½	1/9⅜	Bombay, Ltd.	19/—21/–	...
181,185	Aug. 21	9½	9½	Bournemouth Sliding Scale ...	182—192*	...
690,526	,,	7	7	Do. 7 p.c. max. ...	146—151*	...
493,960	,,	6	6	Do. 6 p.c. Pref. ...	122—127*	...
50,000	June 5	3	3	Do. 3 p.c. Deb. ...	70—75	...
362,025	,,	4	4	Do. 4 p.c. Deb. ...	95—100	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	110—115	...
357,900	Aug. 21	7½	7½	Brighton, &c., 6 p.c. Con. ...	130—135*	...
659,955	,,	6⅔	6⅔	Do. 5 p.c. Con. ...	115—120*	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref. ...	108—113*	...
855,000	Mar. 20	7	8	British Ord.	100—110	−2
100,000	June 19	7	7	Do. 7 p.c. Pref.	136—141	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	June 5	4	4	Do. 4 p.c. Red. Deb. ...	92—97	..
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	100—105	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
100,000	22 May '33	6	4	Cape Town, Ltd.	¼—⅜	...
100,000	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref.	¼—⅜	...
150,000	June 19	4½	4½	Do. 4½ p.c. Deb.	58—68	...
626,860	July 17	6	6	Cardiff Con. Ord.	108—113	...
237,860	June 5	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
98,936	Mar. 20	2/–	2/–	Colombo Ord.	1 1/16—1 7/16	...
24,510	,,	1/4½	1/4½	Do. 7 p.c. Pref.	21/—23/–	...
739,453	Mar. 20	–/11.48	–/11.48	Colonial Gas Assn. Ltd. Ord. ...	16/—18/–	...
296,144	,,	1/3.30	1/3.30	Do. 8 p.c. Pref.	21/—23/–	...
1,775,005	July 31	4	4	Commercial Ord.	47—52	...
140,000	Aug. 21	4	4	Do. 4 p.c. Red. Pref. ...	90—95*	...
620,000	June 5	3	3	Do. 3 p.c. Deb.	56—61	...
286,344	Aug. 21	5	5	Do. 5 p.c. Deb.	103—108*	...
200,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	94— 99*	...
807,560	July 31	7	7	Croydon sliding scale	121—126	...
644,590	,,	5	5	Do. max. div.	92—97	...
620,385	June 19	5	5	Do. 5 p.c. Deb.	107—112	...
208,660	Aug. 21	5	5	Dudley, Brierley Hill & Dist. Ord.	100—105*	...
82,275	,,	5	5	Do. 5 p.c. Con. Pref. ...	100—105*	...
79,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	94—99*	...
239,000	July 31	5	5	East Hull Ord. 5 p.c.	86—91*	...
187,215	Aug. 21	6	5¾	East Surrey Ord. 5 p.c. ...	98—103*	...
176,211	June 5	5	5	Do. 5 p.c. Deb. ...	105—110	...
250,000	July 3	4	8	Gas Consolidation Ord. 'B' ...	18/6—20/6	...
250,000	May 22	4	4	Do. 4 p.c. Red. Cum. Pref.	17/—19/–	...
19,172,463	July 31	5⅜	5⅜	Gas Light & Coke Ord.	17/6—20/–a	+1/3
2,600,000	,,	3½	3½	Do. 3½ p.c. max.	65—70	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	87—92	...
2,993,000	July 3	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	90—95	...
8,602,497	May 22	3	3	Do. 3 p.c. Con. Deb. ...	64—69	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	103—108	...
700,000	Mar. 6	3½	3½	Do. 3½ p.c. Red. Ded. ...	90—95	...
270,466	July 31	6	6	Harrogate New Cons.	95—100	...
157,500	Mar. 20	‡1/–	‡1/–	Hong Kong and China Ord. ...	⅝—¾	...
5,600,000	May 8	8	12	Imperial Continental Cap. ...	100—110	+5
172,810	July 31	3½	3½	Do. 3½ p.c. Red. Deb. ...	85—90	...
63,480	June 19	3	3	Maidstone 3 p.c. Deb.	57—62	...
45,000	May 22	†10	†10	Malta & Mediterranean ...	128—133	...
				Metropolitan (of Melbourne) ...		
392,000	Apl. 6	5½	5½	5½ p.c. Red. Deb.	98—103	...
231,977	Aug. 21	5	5	M.S. Utility 'C' Cons.	93—98*	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref. ...	82—87*	...
390,076	June 19	4	4	Do. 4 p.c. Deb. ...	90—95	...

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week.
148,955	June 19	5	5	M.S. Utility 5 p.c. Deb. ...	105—110	...
125,000	July 3	3½	3½	Do. 3½ p.c. Red. Bds. ...	92—95	...
675,000	May 8	†6	†3	Montevideo, Ltd.	52—62	...
250,000	Aug. 21	7½	7½	North Middlesex 6 p.c. Con. ...	133—138*	...
396,160	July 31	5	5	Northampton 5 p.c. max. ...	101—106	...
300,000	April 24	†9	†7	Oriental, Ltd.	135—145	...
468,537	June 5	7	8	Plymouth & Stonehouse 5 p.c.	112—117	...
621,667	July 31	8⅛	8⅛	Portsmouth & Gosport Cons.	132—142	...
241,446	,,	5	5	Do. 5 p.c. max.	95—100	...
73,350	,,	5	5	Do. 5 p.c. Pref.	100—105	...
75,000	,,	4	4	Do. 4 p.c. Pref.	81—86	...
114,000	July 31	5	5	Preston 5 p.c. Pref.	100—105	...
247,966	June 19	4	4	Primitiva 4 p.c. Cons. Deb. ...	95—100	...
625,959	July 17	4	4	Do. 4 p.c. Red. Deb. ...	93—98	...
15,000	Mar. 6	6	6	San Paulo 6 p.c. Cum. Pref. ...	7⅞—8⅛	...
441,275	May 8	1/1½	1/1⅝	Severn Val. Gas Cor. Ld. Ord.	19/—21/–	...
460,810	Mar. 20	–/10⅝	–/10⅝	,, ,, 4½ p.c. Cum. Pref. ...	18/6—20/6	...
133,201	Aug. 21	5	8⅛	Shrewsbury 5 p.c. Ord. ...	107—117*	...
9,000	June 5	‡4	‡4	South African Ord.	4—5	...
1,996,297	Aug. 21	1/2⅜	1/2⅜	South East'n Gas Cn. Ld. Ord.	20/—22/–*	...
1,000,000	,,		–/10⅝	Do. 4½ p.c. Red. Cum. Pref.	18/—20/–*	...
769,191	,,	4	4	Do. 4 p.c. Cum. Pref. ...	15/—17/–*	...
450,000	,,	4	4	Do. 4 p.c. Deb.	95—100*	...
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95*	...
6,709,895	July 31	6	5	South Met. Ord.	75—80	...
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	115—120	..
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	80—85	...
1,895,445	June 19	3	3	Do. 3 p.c. Deb.	68—73	...
1,000,000	July 17	5	5	Do. 5 p.c. Red. Deb. ...	103—108	...
600,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	92—97	...
1,543,795	July 31	6	6	South Suburban Ord. 5 p.c. ...	97—102	−4
512,925	,,	5	5	Do. 5 p.c. Pref.	101—106	...
500,000	,,	4	4	Do. 4 p.c. Pref.	83—88	...
250,000	,,	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	89—94	...
888,587	June 5	5	5	Do. 5 p.c. Deb.	105—110	...
250,000	,,	4	4	Do. 4 p.c. Deb.	89—94	...
200,000	July 31	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
427,859	Apl. 6	9⅜	1/2⅜	S. Western Gas & Water Ord.	15/—17/–	...
160,523	Apl. 6	–/10⅝	–/10⅝	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...
110,000	June 5	4	4	Do. 4 p.c. Red. Deb. ...	92—97	...
750,541	July 31	5½	5	Southampton Ord. 5 p.c. ...	100—105	...
148,836	June 5	4	4	Do. 4 p.c. Deb. ...	89—94	...
350,000	July 31	5½	5½	Swansea 5½ p.c. Red. Pref. ...	102—107	...
200,000	June 19	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
1,076,490	July 31	6¾	6½	Tottenham and District Ord....	98—103	−5
409,835	,,	5½	5½	Do. 5½ p.c. Pref.	108—113	...
62,235	,,	5	5	Do. 5 p.c. Pref.	100—105	...
453,380	June 19	4	4	Do. 4 p.c. Deb.	87—92	...
85,701	June 5	6	6	Tuscan 6 p.c. Red. Deb. ...	95—100	...
1,247,505	May 8	4	6	U. Kingdom Gas Cor. Ord. ...	15/—17/–	...
1,085,952	May 8	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	17/—19/–	...
772,709	,,	4	4	Do. 4 p.c. 1st Red. Cum. Pf.	17/6—19/6	...
745,263	June 5	4½	4½	Do. 4½ p.c. 2nd Non-Cum. Pf.	13/6—15/6	...
1,093,656	Mar. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	92—97	...
378,106	Mar. 6	7	7	Uxbridge, &c., 5 p.c.	117—122*	...
133,010	,,	5	5	Do. 5 p.c. Pref.	100—105*	...
1,371,138	July 31	7	6½	Wandsworth Consolidated ...	107—112	...
2,525,768	,,	4	4	Do. 4 p.c. Pref.	82—87	...
1,343,964	June 19	5	5	Do. 5 p.c. Deb.	103—108	...
383,745	,,	4	4	Do. 4 p.c. Deb.	89—94	...
400,000	,,	3⅜	3⅜	Do. 3⅜ p.c. Red. Deb. ...	92—97	...
558,342	July 31	6⅛	6½	Watford and St. Albans Ord. ...	107—112	...
200,000	,,	5	5	Do. 5 p.c. Pref.	100—105	...
200,000	,,	5½	5½	Do. 5½ p.c. Pref.	106—111	...
200,000	,,	4	4	Do. 4 p.c. Rd. Pf. (1973/8)	90—95	...
100,000	,,	—	—	Do. 4 p.c. Red. Pf. (1959)	97—102	...
200,000	June 19	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
200,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	83—88	...

a.—The quotation is per £1 of Stock. * Ex. Div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Contd.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations August 31.	Rise or Fall on Week.
202,152	Mar. 20	5	5	Ascot Ord.	97—102	...
128,182	July 3	5	5	Do. 5 p.c. Pref.	101—106	...
31,035	Aug. 21	–/4⅛	–/4⅛	Associated Utilities 4 p.c. Pref.	15/—17/–*	...
100,000	June 19	3⅛	3⅛	Do. 3½ p.c. Red. Deb. ...	93—98	...
17,000	Aug. 21	8	8	Bognor Orig. Ord. 'A' ...	137—147*	...
62,210	,,	8	8	Do. New Add. 'A' ...	137—147*	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	132—142*	...
37,440	July 31	10	10	Cam. Univ. & Town 10 p.c. max.	160—170	...
125,970	,,	7	7	Do. 7 p.c. max.	115—125	...
39,025	,,	5	5	Do. 5 p.c. max.	95—100	...
96,410	July 17	4½	4½	Cardiff 4½ p.c. Pref.	92—97	...
55,520	July 31	6	6	Colchester 6 p.c. Pref.	113—118	...
90,550	Mar. 20	5	5	Do. 5 p.c. Deb. ...	103—108	...
150,000	July 31	4	4	Croydon 4 p.c. Pref.	84—89	...
130,000	June 19	4	4	Do. 4 p.c. Deb.	90—95	...
65,000	Aug. 21	7½	7½	Eastbourne 'A' 5 p.c.	120—130*	...
198,000	,,	6	6	Do. 'B' 3½ p.c.	103—113*	...
112,312	,,	5	5	Do. 5 p.c. Pref.	100—105 *	...
130,000	June 19	5	5	Do. 5 p.c. Deb.	105—110	...
130,500	Aug. 10	7½	7½	Exeter New Ord. (£10) ...	13½—15½	...
24,000	Aug. 21	8½	8½	Gt. Yarmouth 8½ p.c. max. (£30)	24—29*	...
59,400	,,	7½	7½	Do. 7½ p.c. max. (£30) ...	26—31*	...
51,160	June 5	5½	5½	Do. 5½ p.c. Deb.	115—120	...
152,600	Feb. 20	8	9	Guildford Cons.	150—160	...
54,055	,,	5	5	Do. 5 p.c. Pref.	102—107	...
68,250	June 5	5	5	Do. 5 p.c. Deb.	103—108	...
156,600	Aug. 21	7	7	Hampton Court Cons. ...	100—110*	...
86,046	June 19	‡4½	‡5	Holyh'd&N.W.G.&W.Cpn.Ord.	13/6—15/6	...
80,000	Aug. 21	4	4	Lea Bridge 4 p.c. Pref.	78—83*	...
60,000	,,	6	6	Do. 6 p.c. Pref.	113—118*	...
94,876	June 5	4	4	Do. 4 p.c. Deb.	87—92	...
73,620	Mar. 6	8¾	8¾	Luton Cons. 'A'	150—160	...
107,960	Mar. 20	4	5½	Mid Kent Ord. (£10)	8½—9½	...
230,940	July 31	10	10	Oxford & District Ord. ...	145—155	...
47,112	,,	5	5	Do. 5 p.c. Pref.	95—105	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	106—111	...
126,193	May 8	7½	7½	Peterborough Ord.	134—139 *	...
64,990	Mar. 6	7½	7½	Redditch Ord.	115—125	...
166,850	July 31	8	8	Romford Ord.	137—142	...
60,000	,,	4	4	Do. 4 p.c. Pref.	95—100	...
44,000	Mar. 20	5	5	Do. 5 p.c. Deb.	107—112	...
25,570	July 31	5¼	5¼	Rugby 5¼ p.c. Pref.	116—121	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	103—108	...
42,750	June 5	5½	5½	Do. 5½ p.c. Deb.	113—118	...
110,950	Aug. 21	8	8	Ryde Ord.	137—147*	...
270,086	Mar. 20	7	7	Slough Ord.	120—130	...
21,000	June 5	5	5	Do. 5 p.c. Deb.	103—108	...
28,872	May 8	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	16/—18/–	...
28,866	Mar. 6	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	17/—19/–	...
117,228	Aug. 21	7	5	Swindon Cons.	98—103*	...
60,425	June 5	5	5	Do. 5 p.c. Deb.	103—108	...
64,380	June 19	5	5	Torquay & Paignton 5 p.c. Pref.	102—107	...
130,000	Aug. 21	8	5	Wakefield Ord.	101—106*	...
81,650	,,	5	5	Do. 5 p.c. max.	81—86*	...
82,000	July 31	6	6	Weymouth Ord.	101—106	...
273,626	Aug. 21	7	7	Wolverhampton Cons. Ord. ...	126—131*	...
98,384	,,	6	6	Do. 6 p.c. Pref.	113—118*	...
160,000	June 19	5½	5½	Do. 5½ p.c. Red. Deb. ...	102—107	...
106,490	Aug. 21	5½	5½	Wrexham Ord.	89—94*	...
90,000	June 19	5	5	York 5 p.c. Red. Deb.	102—107	...
133,640	July 31	6½	6	Yorktown (Cam.) 5 p.c. Cons.	112—117	...
120,000	,,	5	5	Do. 5 p.c. Pref.	100—105	...
35,000	June 19	5½	5½	Do. 5½ p.c. Deb.	110—115	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week
347,756	July 31	6	5	Bath Cons.	113—115	...
1,667,250	,,	5	5	Bristol, 5 p.c. max.	106—108	...
120,420	June 5	4	4	Do. 1st 4 p.c. Deb.	96—100	...
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	96—100	...
328,790	,,	5	5	Do. 5 p.c. Deb.	113—116	...
274,000	July 31	5	5	Newport (Mon.) 5 p.c. max. ...	93—95	...
13,200	Mar. 20	7	8⅝	Pontyp'l Gas & W. 10 p.c. 'A'	12½—13½	...
13,600	,,	6	5	Do. 7 p.c. 'B'	10½—11½	...
40,000	,,	6	5	Do. 7 p.c. 'C'	10½—11½	...
140,778	July 31	5	5	Weston-super-Mare Cons. ...	102—104	...
64,338	June 19	4	4	Do. 4 p.c. Deb.	97—99	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	146—150	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week
157,150	July 31	6½	5	Chester 5 p.c. Ord.	105—108	...
92,500	June 5	4	4	Do. 4 p.c. Pref.	94—98	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	86—89	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	96—100	...
2,167,410	Aug. 21	6	6	Liverpool 5 p.c. Ord.	111—113*	...
245,500	June 19	5	5	Do. 5 p.c. Red Pref. ...	100—105	...
306,083	July 17	4	4	Do. 4 p.c. Deb.	99—101	...
106,280	July 31	10	10	Preston 'A' 10 p.c.	174—184	...
188,219	,,	7	7	Do. 'B' 7 p.c.	126—136	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week
122,577	Aug. 21	8	8	Blyth 5 p.c. Ord.	146½—148½*	...
732,000	Aug. 21	3	4	Hartlepool G. & W. Cn. & New	74½—76½*	...
2,061,315	July 31	5¾	5	Newcastle & Gateshead Con.	20/—21/–a	...
682,856	,,	4	4	Do. 4 p.c. Pref.	85—87	...
776,706	June 5	3½	3½	Do. 3½ p.c. Deb.	83—84	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	101—103	...
332,351	Aug. 21	6	6	Sunderland 6 p.c. max. ...	126—128*	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week
542,270	Aug. 10	9	6	Derby Con.	130—135	...
55,000	June 19	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	June 19	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	102—107	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations August 31.	Rise or Fall on Week
10,000	Aug. 21	10	10	Great Grimsby 'A' Ord. ...	180—190*	...
6,500	,,	10	10	Do. 'B' Ord. ...	180—190*	...
79,000	,,	10	10	Do. 'C' Ord. ...	175—185*	...
1,806,339	Feb. 20	6½	6½	Sheffield Cons.	133—136	...
95,000	July 3	4	4	Do. 4 p.c. Deb.	99—101	...

a The quotation is per £1 of Stock.
* Ex. div. ‡ For year.

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